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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.												
10/799,346	03/12/2004	Andreas Menkhoff	1890-0069	6214												
7590 Maginot, Moore & Beck Bank One Tower Suite 3000 111 Monument Circle Indianapolis, IN 46204		12/17/2007	<table border="1"><tr><td colspan="2">EXAMINER</td></tr><tr><td colspan="2">LIU, BEN H</td></tr><tr><td>ART UNIT</td><td>PAPER NUMBER</td></tr><tr><td>2616</td><td></td></tr><tr><td>MAIL DATE</td><td>DELIVERY MODE</td></tr><tr><td>12/17/2007</td><td>PAPER</td></tr></table>		EXAMINER		LIU, BEN H		ART UNIT	PAPER NUMBER	2616		MAIL DATE	DELIVERY MODE	12/17/2007	PAPER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/799,346	Applicant(s) MENKHOFF, ANDREAS	
	Examiner Ben H. Liu	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12, 14-17 and 21-31 is/are rejected.
- 7) ☒ Claim(s) 13 and 18-20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This is in response to an amendment/response filed on September 26, 2007.
2. Claim 24 have been amended.
3. No claims have been cancelled.
4. No claims have been added.
5. Claims 12-31 are currently pending.

Specification

6. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 12, 14-17, 21-27, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art in view of McCarty, Jr. et al. (U.S. Patent 6,704,353) and further in view of Marchok et al. (U.S. Patent 6,804,192).

Regarding claims 12 and 23, the admitted prior art discloses an apparatus and method for filtering data symbols for a decision based data processing system that calculates the minimum interval between each of the n data symbols and a plurality of nominal data symbols and sorts the minimum intervals according to their value (*see specifications page 2 lines 17-36, page 3 lines 1-16, and figure 2*). The admitted prior art discloses all the subject matter of the claimed invention with the exception of a n th-order median filter operable to filter out one data symbol from the n buffer-stored data symbols, wherein the calculated minimum interval for the filtered out one data symbol has a mean value for the n calculated minimum intervals. McCarty, Jr. et al. from the same or similar fields of endeavor disclose a median filter which is applied to an odd number of data points from the incoming signal (*see column 6 lines 42-57*). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the median filter as taught by McCarty, Jr. et al. with the apparatus for filtering data symbols for a decision based data processing system which calculates the minimum interval between each of the n buffer-stored data symbols and a plurality of nominal data symbols as disclosed by the admitted prior art. The median filter can be implemented by sending the sorted minimum intervals into the filter input. The motivation for using the median filter with the apparatus for filtering data

symbols for a decision based data processing system is to smooth the incoming signal prior to enable better processing of the signal.

The admitted prior art and McCarty, Jr. et al. teach all the subject matter of the claimed invention with the exception of a buffer store operable to buffer-store a sequence of n sequentially received data symbols, wherein $n \geq 3$ and wherein the buffer store is a FIFO register. Marchok et al. from the same or similar fields of endeavor disclose a buffer which stores data symbols that are outputted to signal filters. Since a signal is typically processed sequentially, the buffer may be implemented as a FIFO register. The buffer store may store an odd number of data symbols (*see column 13 lines 40-47*). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the data symbol buffer as taught by Marchok et al. with the apparatus and method for filtering data symbols for a decision based data processing system as taught by the admitted prior art and McCarty, Jr. et al. The buffer can be implemented by coupling the output of the buffer to the input of the median filter. The motivation for using the buffer is to allow to the median filter to access select values of the calculated minimum interviews.

Regarding claims 14 and 26, the admitted prior art and McCarty Jr., et al. teach all the subject matter of the claimed invention with the exception wherein the buffer store is a FIFO register. Marchok et al. from the same or similar fields of endeavor disclose a buffer which stores data symbols that are outputted to signal filters. Since a signal is typically processed sequentially, the buffer may be implemented as a FIFO register. The buffer store may store an odd number of data symbols (*see column 13 lines 40-47*). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the data symbol buffer as

taught by Marchok et al. with the apparatus and method for filtering data symbols for a decision based data processing system as taught by the admitted prior art and McCarty, Jr. et al. The buffer can be implemented by coupling the output of the buffer to the input of the median filter. The motivation for using the buffer is to allow to the median filter to access select values of the calculated minimum intervals.

Regarding claims 15-17 and 27, the admitted prior art and Marchok et al. disclose all the subject matter of the claimed invention with the exception of a n th-order median filter wherein n is an odd number. McCarty, Jr. et al. from the same or similar fields of endeavor disclose a median filter which is applied to an odd number of data points from the incoming signal (*see column 6 lines 42-57*). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the median filter as taught by McCarty, Jr. et al. with the apparatus for filtering data symbols for a decision based data processing system as disclosed by the admitted prior art and Marchok et al. The median filter can be implemented by sending the sorted minimum intervals into the filter input. The motivation for using the median filter with the apparatus for filtering data symbols for a decision based data processing system is to smooth the incoming signal prior to enable better processing of the signal.

Regarding claim 21 and 31, the admitted prior art and McCarty Jr., et al. teach all the subject matter of the claimed invention with the exception wherein the plurality of nominal data symbols are stored in a register which is programmable. Marchok et al. from the same or similar fields of endeavor disclose a register which stores a data symbol (*see column 15 lines 17-18*). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the data symbol register as taught by Marchok et al. with the apparatus and

method for filtering data symbols for a decision based data processing system as taught by the admitted prior art and McCarty, Jr. et al. The data symbol register can be implemented by coupling the output of the buffer to the input of the data symbol register. The motivation for using the data symbol register is to preserve the data symbol before it is overwritten by subsequent signals.

Regarding claims 22 and 24, the admitted prior art and Marchok et al. disclose all the subject matter of the claimed invention with the exception wherein selecting a mean minimum interval comprises determining the median minimum interval. McCarty, Jr. et al. from the same or similar fields of endeavor discloses a median filter which selects the median minimum interval (*see column 6 lines 42-57*). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the median filter as taught by McCarty, Jr. et al. with the apparatus for filtering data symbols for a decision based data processing system as disclosed by the admitted prior art and Marchok et al. The median filter can be implemented by sending the sorted minimum intervals into the filter input. The motivation for using the median filter with the apparatus for filtering data symbols for a decision based data processing system is to smooth the incoming signal prior to enable better processing of the signal.

Regarding claim 25, the admitted prior art and McCarty Jr., et al. teach all the subject matter of the claimed invention with the exception wherein a multiplexer is provided for outputting the buffer-stored data symbol associated with the selected minimum interval to the decision based processing system. Marchok et al. from the same or similar fields of endeavor discloses a multiplexer which receives data symbols from the symbol buffer for further processing (*see column 13 lines 40-47*). Thus, it would have been obvious to the person of

ordinary skill in the art at the time of the invention to use the multiplexor as taught by Marchok et al. with the apparatus and method for filtering data symbols for a decision based data processing system as taught by the admitted prior art and McCarty, Jr. et al. The multiplexor can be implemented by coupling the output of the buffer to the input of the multiplexor. The motivation for using the multiplexor is to allow to the selection of various data symbols from the data symbol buffers.

10. Claims 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art, McCarty, Jr. et al. (U.S. Patent 6,704,353), Marchok et al. (U.S. Patent 6,804,192) as applied in claim 23 and further in view of Yoon et al. (U.S. Patent 6,560,304).

The admitted prior art, McCarty, Jr. et al., and Marchok et al. fail to disclose a decision based data processing system that is a clock phase detector, carrier phase detector, or an equalizer. Yoon et al. from the same or similar fields of endeavor disclose a phase detector that receives the outputs of a filtering signal (*see column 5 lines 22-37*). The phase detector can be used as a clock phase detector, carrier phase detector, or an equalizer. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the phase detector as taught by Yoon et al. with the with the method for filtering data symbols for a decision based data processing system as taught by the admitted prior art, McCarty, Jr. et al., and Marchok et al. The phase detector can be implemented with the method for filtering data symbols for a decision based data processing system by coupling the output of the median filter to the input of the phase detector. The motivation for using the phase detector with the method

for filtering data symbols for a decision based data processing system is to provide a timing phase signal to compare with the data signal.

Allowable Subject Matter

11. Claims 13 and 18-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

12. Claim 24 was previously objected for the following informalities:

In claim 24, it appears the limitation "a mean minimum interval" in line 1 refers to the "mean minimum interval" in claim 23 line 7. If that is the case, it is suggested that the applicant change the phrase to "the mean minimum interval." The applicant has overcome the objections by amending the claims. In response, the examiner has withdrawn the objections.

13. The abstract was previous objected for the following informalities:

The abstract is typically restricted to a single paragraph. It is suggested that the applicant delete the phrase "Figure 5" in line 14. The applicant has overcome the objections by amending the claims. In response, the examiner has withdrawn the objections.

14. Upon further consideration, claims 12, 14-22-27, and 31, even if amended to overcome the previously cited rejections, are not allowable because the limitations are taught by the

admitted prior art in view of McCarty, Jr. et al. (U.S. Patent 6,704,353) and further in view of Marchok et al. (U.S. Patent 6,804,192). Dependent claims 28-30 are not allowable because the limitations are taught by the admitted prior art, McCarty, Jr. et al. (U.S. Patent 6,704,353) and Marchok et al. (U.S. Patent 6,804,192) and further in view of Yoon et al. (U.S. Patent 6,560,304).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. (*see form PTO-892*).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben H. Liu whose telephone number is (571) 270-3118. The examiner can normally be reached on 9:00AM to 6:30PM.

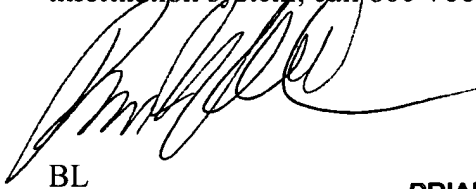
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on (571) 272-6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

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like assistance from a USPTO Customer Service Representative or access to the automated
information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Brian Nguyen', with a long horizontal flourish extending to the right.

BL

BRIAN NGUYEN
PRIMARY EXAMINER